CLAIMS

What is claimed is:

1. Computer apparatus comprising:
a payload delivery application for delivering a payload to a storage device;
a disk operating system (DOS) including a DOS filing system;
a filing system interface between the payload delivery application and the DOS
5   filing system for initiating open, close, read and write tasks with regard to the storage
device;
a basic input/output system (BIOS) that provides interrupt 13h services; and
an Int 21h read only memory (ROM) client loader that interfaces with the
payload delivery application and the BIOS that is operative when the computer
10   apparatus is turned on, and which gauges a time when the DOS filing system is stable
enough to permit communication with the storage device and which thereafter invokes
the payload delivery application to deliver the payload to the storage device.

2. The computer apparatus recited in Claim 1 which further comprises flash
memory, and wherein the payload delivery application delivers a ROM-based payload
stored in the flash memory to the storage device.

3. The computer apparatus recited in Claim 1 wherein the Int 21h read only
memory (ROM) client loader gauges the time when the DOS filing system is stable by
monitoring an operating system Int 13h call is made to the BIOS.

4. A method of delivering a payload to a storage device of a computer system
comprising a payload delivery application, a basic input/output system (BIOS) that
provides interrupt 13h services, a disk operating system (DOS) including a DOS filing
system, and an interrupt (Int) 21h read only memory (ROM) client loader, the method
5   comprising the steps of:
turning on the computer system to initiate a power-on-self-test (POST)
procedure;
saving the interface to the storage device;
hooking an interface to the storage device using the Int 21h ROM client loader
10   during the POST procedure;
loading the disk operating system at the conclusion of the POST procedure;
calling the storage device interface from the disk operating system;

calling the payload delivery program using the Int 21h ROM client loader in response to the storage device interface call;

15   executing the payload delivery program to deliver the payload to the storage device; and

after payload loading is complete, restoring the stored storage device interface with the Int 21h ROM client loader.

5. The method recited in Claim 4 wherein the Int 21h ROM client loader detects the storage device interface call from the disk operating system to determine the time when the DOS filing system is stable enough to permit execution of the payload delivery application to deliver the payload to the storage device.

6. The method recited in Claim 4 wherein the storage device interface call by the operating system comprises an Int 13h call which is read by the Int 21h ROM client loader and which launches the payload delivery application to deliver the payload to the storage device.

7. The method recited in Claim 4 wherein the Int 21h ROM client loader comprises Int 21h RCL startup code and Int 21h RCL run-time code and wherein:

the Int 21h RCL startup code is run late in the POST procedure;

the Int 21h RCL startup code hooks the interface to the storage device and save

5   the interface to the storage device;

the Int 21h RCL run-time code starts at the conclusion of the POST procedure;

the Int 21h RCL run-time code detects calling of the storage device interface by the disk operating system; and

the Int 21h RCL run-time code invokes the payload delivery program.

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8. A method of delivering a payload to a storage device of a computer system, comprising the steps of:

configuring the computer system to have a payload delivery application for delivering the payload to the storage device, a disk operating system (DOS) including a

5   DOS filing system, a filing system interface for interfacing between the payload delivery application and the DOS filing system for performing open, close, read and write tasks on the storage device, a basic input/output system (BIOS) that provides interrupt 13h services that interfaces with the DOS filing system, and an Int 21h read only memory (ROM) client loader (RCL) comprising Int 21h RCL startup code and Int 21h RCL run-

10   time code;

turning on the computer system to initiate a power-on-self-test (POST) procedure;

running the Int 21h RCL startup code late in the POST procedure;

saving the interface to the storage device;

15   hooking an interface to the storage device with the startup code so that the Int 21h RCL run-time code can get called;

loading the disk operating system at the conclusion of the POST procedure;

starting the Int 21h RCL run-time code;

calling the storage device interface from the disk operating system;

20   calling the payload delivery program using the RCL run-time code in response to the storage device interface call;

executing the payload delivery program to deliver the payload to the storage device; and

after payload loading is complete, restoring the stored storage device interface 25   with the Int 21h ROM client loader run-time code.

9. The method recited in Claim 8 wherein the Int 21h RCL run-time code detects the storage device interface call from the disk operating system to determine the time when the DOS filing system is stable enough to permit execution of the payload delivery application to deliver the payload to the storage device.

10. The method recited in Claim 8 wherein the storage device interface call by the operating system comprises an Int 13h call which is read by the Int 21h RCL run-time code and which invokes the payload delivery application to deliver the payload to the storage device.